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Abstract *Background* Examinations of the role of demographic characteristics in quality of life (QOL) in psychiatric samples are not new. However, serious limitations of previous research have been that (1) QOL was not assessed according to current recommendations, (2) assessment of QOL was often hampered by a substantial overlap in content between symptoms and QOL measures, and (3) the majority of the study samples had quite specific characteristics hampering the generalizability of results, as a result of which clinical implications of the results remained unclear. The aim of the present study was to investigate explicitly the relationships between demographics and QOL in a sample reflecting the general population of psychiatric outpatients, QOL being assessed in a comprehensive, culturally sensitive, and subjective way, paying attention to the relative importance of its various facets. The main hypothesis was that these relationships would be rather weak. *Method* From a population of 533 adult Dutch psychiatric outpatients, 495 participants completed the World Health Organization Quality of Life (WHOQOL)-Bref for assessing QOL. Furthermore, several demographic characteristics were recorded. *Results* Statistically significant correlations were found between partner relationship, habitual status, work, and sick leave and the WHOQOL-Bref domains social relationships and environment. Psychological health was associated to partner relationship, educational level, and sick leave. The total amount of QOL variance explained by demographics was rather low. *Conclusion* Amongst factors determining QOL, demographic characteristics are relatively unimportant. Therefore, paying attention to demographics during psychiatric treatment will probably have little effect on improvement of QOL.

Key words demographics – quality of life – psychiatric outpatients – WHOQOL-Bref

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Introduction

In psychiatric research, quality of life (QOL) has increasingly become an important topic. The World Health Organization Quality of Life (WHOQOL) group has defined QOL as 'a person's perception of his/her position in life within the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards, and concerns' [43]. One of the reasons for its growing popularity is that in Western industrialized countries, mental health-care systems have undergone a fundamental change over the last three decades after the introduction of antipsychotic medication and a focus shift from institutionalized care to community care. These changes have led to a growing interest in the effects of psychiatric disorders on aspects of everyday life [19]. Another reason is that the predominance of classical medical endpoints, such as mortality and morbidity, has been criticized for failing to represent adequately the potential outcomes of medical interventions [14, 33].

There has been an ongoing scientific debate about the way QOL should be assessed. This debate has resulted in four principles. First, QOL should be measured in a *comprehensive* way, covering a broad range

of domains and facets [4, 17]. Second, it is felt important that *subjective* QOL is measured through self-report questionnaires [4, 24]. A third fundamental principle reflects the conviction that the *relative importance of various facets* of QOL is a crucial issue for the accuracy of the overall assessment of QOL [15, 24]. Finally, the instruments for the assessment of QOL need to be *culturally sensitive* and should contain questions that address culturally relevant issues, using culturally relevant language [6, 21, 38].

QOL, as an outcome measure, is the result of a complex interplay between demographic, clinical, therapeutic, and psychosocial variables. *Demographic variables* (e.g., age, gender, level of education, having children, and habitual status) are associated with outcome scores of QOL-related concepts, such as life satisfaction or well-being [1, 2, 5, 7, 20, 23, 25–27, 30, 31, 35, 41]. In populations of *healthy* people, Marks and Fleming [27] as well as Kim and McKenry [20] found that being married had a positive influence on well-being. Reviewing earlier studies, Barry [1] concluded that there are significant relationships between demographic characteristics (e.g., finances, leisure, living situation, social relationships) and life satisfaction. However, these relationships are rather modest. Richmond et al. [35] found that demographic characteristics, such as income, presence or number of children in the home and township, gender, age, marital status, and education, were associated with indicators of QOL.

With respect to people with *psychiatric disorders*, examination of the literature reveals that persons with severe mental illness are important in studies investigating the relationship between demographic characteristics and QOL. Lam and Rosenheck [23] collected longitudinal data from a large group of homeless mentally ill patients, diagnosed with major depression, schizophrenia, other psychoses, bipolar disorder, personality disorder, or anxiety disorder. Compared with baseline measurements, improvement of QOL was associated with decreased psychiatric symptoms, and also with increases in social support, income, employment, and service use. Lang et al. [25] did a literature search and found that, for example, marital status, employment, superior economic status, high age, few medication side effects, and low psychopathology were positively correlated with QOL. Mercier et al. [31] studied the effects of age and gender on the subjective QOL of people with severe and persistent mental illness. They demonstrated that age was systematically related to the degree of satisfaction, with older participants being more satisfied than younger ones.

With regard to the influence of demographic variables on QOL, Mercier [30] and Chan et al. [7] found that sociodemographic variables barely affected subjective well-being. Bengtsson-Tops and Hansson [2], Browne et al. [5], Lehman [26], and Sullivan et al. [41] demonstrated that demographics were not related to total QOL scores or general well-being.

Nowadays, the costs for psychiatric treatments (e.g., drugs, psychotherapy) are high, while at the same time, the financial means are limited. Due to newly developed forms of psychiatric treatment, it is likely that patients with psychiatric disorders will use health-care facilities more frequently and during a long(er) period of their life. An outcome measure such as QOL can be of great value in determining cost effectiveness of psychiatric treatment policies and in utility studies. This is the more so as, apart from alleviation of symptoms, improvement of QOL is an important goal of treatment. For QOL to be useful as an outcome measure, the relationships between QOL and its potentially determining factors, such as demographic variables, should be scrutinized in extensive and systematic ways.

Limitations of previous research have been that (1) QOL was not assessed according to the current recommendations (see above), (2) assessment of QOL in psychiatric patients is often hampered by a substantial overlap in content between symptoms and QOL measures [18], and (3) the majority of the study samples had quite specific characteristics (e.g., [3, 13, 37, 39]). As a result, clinical implications of the results remained unclear due to low generalizability.

The aim of the present study was to investigate explicitly the relationships between a broad spectrum of demographic characteristics and QOL while overcoming these limitations. This was done by (1) assessing QOL in a comprehensive, culturally sensitive, and subjective way, paying attention to the relative importance of its various facets, while avoiding, as much as possible, overlap in content between symptoms and QOL measure, and (2) investigating a *general* population of adult psychiatric outpatients. Furthermore, it was decided to use also multiple regression analysis with all demographic variables as independent variables simultaneously in the analysis to examine total percentage of variance explained by demographic characteristics. The main hypothesis was that this relationship, in accordance with earlier research [7, 30], would be rather weak.

Materials and methods

Procedure

This study was conducted at GGZ-Midden Brabant, the community mental health center in Tilburg, The Netherlands, after approval by the Medical Ethical Committee of the Southern Netherlands. Participants were outpatients of Dutch ethnic origin, referred to the center during a period of 1 year. Included were people aged 21–50 years. Potential participants could enter the study in two ways: through a selection procedure in which every third of all referrals was selected for psychiatric evaluation or through internal referral by colleagues (i.e., psychologists asking for psychiatric consultation). Internal referrals were considered in order to enlarge the sample size. After complete description of the study to the participants, written informed consent was obtained. Exclusion criteria were inability to undergo the various verbal and written parts of the investigation protocol (interviews to obtain the psychiatric diagnosis and the questionnaire) due to severe mental illness, illiteracy, dys-

lexia, mental retardation, problems with sight or hearing, cerebral damage, or refusal to participate.

Measures

Quality of life Quality of life was measured using the WHOQOL-Bref [44], Dutch version [10]. This is an abbreviated version of the WHOQOL-100 quality of life assessment instrument, which is a generic, multidimensional measure for subjective assessment of QOL [9, 11, 45]. It is based on the WHOQOL group definition of QOL that meets *all* the four principles mentioned above (instead of many existing QOL measures, which only address *some* of these principles) and minimizes an overlap in content between symptoms and the measurement of QOL. The WHOQOL-Bref was, in particular, developed to enable a brief and accurate assessment of QOL in routine clinical work, large-scale epidemiological studies, and clinical trials [44]. The WHOQOL-Bref comprises one question for each of the 24 facets in the WHOQOL-100 that belong to one of the domains (physical health, psychological health, social relationships, and environment) and two questions to assess overall quality of life and perceived health. Thus, it has 26 items, each with a five-point Likert scale. In a previous study, domain scores were found to correlate highly with the WHOQOL-100 domain scores [44]. High scores indicate good QOL. The time of reference is the previous 2 weeks. We used the four-factor structure of the WHOQOL-Bref that was found during its development and confirmed in a previous study among a general population of psychiatric outpatients [42]. In earlier research, analyses of internal consistency, item–total correlations, discriminant validity, and construct validity through confirmatory factor analysis indicated that the WHOQOL-Bref had good to excellent reliability and validity in populations of psychiatric patients [40, 42].

Demographical variables Data concerning the participants' age and sex were collected. Furthermore, participants were asked whether they currently were involved in a partner relationship (lasting at least 4 weeks), lived together with at least one other person (e.g., partner, parents, child), had children, and whether they had a job. Sick leave (reported sick at work; yes or no) and duration of sick leave (in weeks) were noted. Finally, the level of education was recorded and subsequently classified using the following categories: 'low' (i.e., no education completed at all, primary school, individual teaching, lower level of vocational training), 'middle' (i.e., lower general secondary education, higher general secondary education, pre-university education, intermediate level of vocational education), and 'high' (i.e., higher level of vocational education, university).

Statistical analyses

To determine the relationships between the WHOQOL-Bref and the demographic variables sex, having children, partner relationship, habitual status, work, and sick leave, Student's *t*-tests were used ($p<0.05$). The relationships between the WHOQOL-Bref and age and duration of sick leave were examined using Pearson's correlations ($p<0.05$). The relationship between the WHOQOL-Bref and level of education was determined using analyses of variance (one-way ANOVAs with post hoc Scheffé multiple comparison tests). To determine the amount of variance of the four domain scores of the WHOQOL-Bref (dependent variables) explained by the demographic variables (independent variables), multiple regression analyses (method stepwise) were performed. *All* demographics were entered as independent variables in each multiple regression analysis. When independent variables did not concern the whole group of participants (sick leave, duration of sick leave), dummy variables were used: in the case of the variable sick leave, for participants who did *not* report sick at work, the variable 'not reported sick' was entered. The data were processed using the Statistical Package for the Social Sciences (SPSS, version 12.0 for Windows).

Results

Patients

During the 1-year period of data gathering, 3,892 people (male, 40.4%; female, 59.6%) were referred to the outpatient clinic of the center. About half of them (n=1,559) were potential participants (male, 42.2%; female, 57.8%). The total group that entered the study contained 533 participants (male, 46.2%; female, 53.8%); 438 participants (82.2%) entered the study through selection (male, 42.7%; female, 57.3%) and 95 through internal referral (male, 62.1%; female, 37.9%). From the 438 selected participants, 20 were unable to undergo the research protocol due to severe psychotic disorder (n=7), major depressive episode (n=9), dyslexia (n=2), mental retardation (n=2), and eight persons refused to participate (four diagnosed with antisocial personality disorder and four with substance-related disorder). From the 95 internally referred participants, six were unable to undergo the research protocol due to severe psychotic disorder (n=1), substance-related disorder (n=2), mental retardation (n=1), and severe visual handicap (n=2). Four refused to participate (all diagnosed with antisocial personality disorder). Thus, from the total group of 533 participants, 495 fully completed the test booklet (92.9%; 410 randomly selected and 85 by internal referral; 44.2% male, mean age 34.6 years, SD 8.6, range 21–50 years; 55.8% female, mean age 32.6 years, SD 8.5, range 21–50 years).

At the moment of the study, 66.5% of the participants were involved in a partner relationship (lasting more than 4 weeks); 75.4% were living together with at least one other person [72.3% with partner (and children), 14.6% with parent(s), 7.8% with child(ren), 5.3% with others]. An overlap of 79.4% existed between partner relationship and habitual status. Of the participants, 42.2% had at least one child, whereas 57.8% had none. An educational level with the qualification 'low' was noted for 43.4% of the participants, whereas 45.3% were qualified as 'middle' and the remaining 11.3% as 'high' educational level. The majority of the participants (66.7%) had a job. However, 43.3% of them (n=143) had reported sick at work. Of those 143 people, the mean duration of sick leave at the moment of investigation was 16 weeks (SD 13.4; range 1–50 weeks).

Relationship between separate demographic characteristics and QOL

With regard to sex, the main finding was that female participants had a significantly higher score on the domain social relationships ($t=-2.76$, $p<0.01$). Age had negative correlations with the QOL domains physical

Table 1 Student *t*-tests: relationships between WHOQOL-Bref and partner relationship, habitual status, work, and sick leave

WHOQOL-Bref domains	Partner relationship		Habitual status		Work		Sick leave	
	t value	*p* value	*t* value	*p* value	*t* value	*p* value	*t* value	*p* value
Overall quality of life and general health	2.94	**<0.01**	2.62	**<0.01**	1.93	0.05	−4.52	**<0.001**
Physical health	2.48	**<0.05**	2.25	**<0.05**	2.89	**<0.01**	−11.14	**<0.001**
Psychological health	2.45	**<0.05**	1.88	0.06	1.15	0.25	−5.59	**<0.001**
Social relationships	6.77	**<0.001**	4.98	**<0.001**	0.72	0.49	−0.66	0.51
Environment	4.07	**<0.001**	3.94	**<0.001**	4.02	**<0.001**	−4.40	**<0.001**

t values are positive when participants who have a partner relationship have a higher mean score than those who are single, when participants who are living together with at least one other person have a higher mean score than those living alone, when participants with a job have a higher mean score than those without a job, and when participants who reported sick at work have a higher mean score than those who did not. *p* values <0.05 are in bold. *p* values represent Sig. (two-tailed)

health (r=−0.11, p<0.05) and social relationships (r=−0.13, p<0.01) and with the facet overall quality of life and general health (r=−0.14, p<0.01). Participants having at least one child had a significantly higher score on the QOL domain psychological health (t=2.02, p<0.05).

The results concerning the relationship between QOL and partner relationship are presented in Table 1. Participants involved in a partner relationship (n=329) had significantly higher scores on all domains of the WHOQOL-Bref and on the facet overall quality of life and general health. Participants living together with at least one other person (n=373) had significantly higher scores on the domains physical health, social relationships, and environment and on the facet overall quality of life and general health. No significant difference was found on the domain psychological health. Participants with a job (n=330) had significantly higher scores on the domains physical health and environment. As is also shown in Table 1, participants who had reported sick at work (n=143) had significantly lower scores on the domains physical health, psychological health, and environment and on the facet overall quality of life and general health. For the group of participants who reported sick at work, duration of sick leave was negatively correlated with the QOL domain environment (r=−0.26).

The results concerning the relationship between QOL and level of education are presented in Table 2. The significant differences that were found mainly existed between low educational level, on the one hand, and middle and high educational levels, on the other hand. In general, compared with individuals with a low educational level, the results showed that a higher (middle or high) level of education was associated with higher QOL scores. The significant differences concerned the domains physical health and environment.

Multiple regression analyses

The results of the multiple regression analyses are shown in Table 3.

Although demographics explained some variance of QOL, the amount of variance did not exceed 22.2%. Demographic characteristics explained less variance of scores for the domains psychological health (7.3%) and social relationships (11.0%) than for the domains physical health (22.2%) and environment (18.1%). The variable 'not reported sick' explained the highest amount of variance in all QOL domains, with an exception for social relationships, where partner relationship appeared the most important variable (8.5%). The strongest relationship was found between the variable 'not reported sick' and the domain physical health (17.1%). The variable sex did not play a role in any of the QOL scores. In general, the demographic characteristic partner relationship explained more of the variance of QOL (mainly regarding the domain social relationships) than did habitual status.

Discussion

The aim of the present study was to investigate explicitly the relationship between demographic characteristics and QOL scores in a general sample of psychiatric outpatients.

With regard to sex and QOL, female participants were more satisfied with their social relationships. Associations between age and QOL revealed that the older people in our sample were less satisfied with overall QOL, physical health, and social relationships. Age has commonly been found to correlate with the tendency of older people to report a higher level of

Table 2 One-way ANOVA concerning WHOQOL-Bref and educational level

Dependent variable	*F* value	Sig.	Educational level (mean)	
Physical health	8.01	<0.001	Low (11.19)	Middle (12.08)
			Low (11.19)	High (12.68)
Environment	14.48	<0.001	Low (9.67)	Middle (10.38)
			Low (9.67)	High (11.11)

Only domains of the WHOQOL-Bref with significant mean differences between educational levels at the 0.01 level (two-tailed) are reported

Table 3 Multiple regression analyses (stepwise method), *n*=495

Dependent variable	*F* value	*P* value	Independent variable	R^2 total	Beta
Overall quality of life and general health	15.06	<0.001	Not reported sick[a]	0.06	0.25
			Partner relationship	0.08	0.11
			Age	0.10	−0.20
			Children	0.11	−0.12
Physical health	35.00	<0.001	Not reported sick[a]	0.17	0.49
			Educational level	0.19	0.14
			Work	0.21	−0.17
			Partner relationship	0.22	0.12
Psychological health	12.96	<0.001	Not reported sick[a]	0.05	0.29
			Partner relationship	0.06	0.11
			Work	0.07	−0.12
Social relationships	30.41	<0.001	Partner relationship	0.09	0.31
			Age	0.11	−0.16
Environment	27.11	<0.001	Not reported sick[a]	0.07	0.23
			Educational level	0.12	0.23
			Habitual status	0.17	−0.16
			Partner relationship	0.18	0.13

[a] Participants with a job (*n*=330), who did *not* report sick at work (*n*=187)

general life satisfaction than younger people [31]. This seems to be in contradiction with our findings, but the differences we found, though significant, were minor. Moreover, the age range of our participants was relatively small (21–50 years), whereas in most studies (e.g., [12, 32]), the reported findings concerned populations with a wider age range, especially above 50 years.

Participants having at least one child had only one QOL benefit over those who had none: they scored significantly higher on the domain psychological health. Findings of earlier studies concerning the relationship between well-being and having children are inconsistent [27]. Having a partner relationship was positively correlated with all aspects of QOL. Being involved in a partner relationship was more beneficial for QOL than just cohabitating. The relationship between psychological well-being and marriage has been well documented in the literature. In general, it is found to be strong and positive [20].

With regard to the QOL domains physical health and environment, participants with a job scored significantly higher than unemployed participants. Winefield et al. [46], Lahelma [22], and Pugliesi [34] reported similar findings in populations of healthy persons. Sick leave was negatively correlated with all aspects of the WHOQOL-Bref, with the exception of the domain social relationships. Sick leave had, in particular, a strong negative correlation with physical health, whereas the variable 'not reported sick' explained the highest amount of QOL variance.

Concerning the relationship between QOL and educational level, the results showed that a higher (middle or high) level of education was related with higher QOL scores concerning physical health and environment. This result is in accordance with the finding of McCoy and Filson [28], who showed that education was positively related to a higher sense of well-being.

An interesting finding was that the variable sex did not explain any variance in the QOL scores. A tentative explanation for this finding could be as follows. It is known that in healthy samples of the general population, females are, on an average, more neurotic than males [16]. As the personality dimension neuroticism contributes substantially to subjective well-being [8, 29, 36], it is expected that in these samples, differences in QOL scores are present between females and males. In populations of *psychiatric* patients, it is assumed that *both* females and males will have, on average, high scores on the personality dimension neuroticism, as a consequence of which the differences in QOL scores between the sexes disappear.

If QOL is to be used as an outcome measure in health services evaluation, in clinical (psychopharmacological) trials, and in assessing the (cost) effectiveness and the relative merits of different treatments of psychiatric patients, it is necessary to identify factors (e.g., demographic, clinical, therapeutic, and psychosocial variables) that determine QOL and to quantify their relationship with QOL. The results of the present study, although not fully comparable with previous research, generally are in accordance with prior findings [7, 30]. The added value to the current body of knowledge on the relationships between demographics and QOL results from the following. First, QOL was assessed using the WHOQOL-Bref, thus enabling the measurement of QOL according to recent recommendations, i.e., in a comprehensive, culturally sensitive, and subjective way, paying attention to the relative importance of the various aspects of QOL [4, 6, 15, 17, 21, 24, 38]. Second, additional advantages of the WHOQOL-Bref are its good psychometric properties and the relatively small overlap in content between symptoms and QOL facets [40, 42, 44]. Third, the characteristics of the study sample (i.e., a *general* population of adult psychiatric outpatients) were different from earlier study populations. This provides information on the generalizability of the relationship between demographic characteristics and QOL. Finally, *all* demographics were entered as independent vari-

ables in each multiple regression analysis, thus providing insights into the amount in which *all* investigated demographic characteristics explain QOL variance.

In conclusion, the present study has demonstrated that, with the exception of the variable 'not reported sick' in participants with a job, only a relatively small part of the variance of the QOL scores was explained by demographic characteristics.

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